

CLAIMS:

1. Sound-shielding element for covering at least one of sound-reflecting or sound-generating structural parts, comprising:
  - at least one panel or layer;
  - a plurality of small perforations formed in said at least one panel or layer;
  - wherein an average diameter or width of said perforations ranges between 0.001 and 0.7 mm and a hole/surface ratio ranges between 0.001 and 8 % so that the sound waves entering said perforations initiate physical effects in a gas volume contained in said perforations.
2. Sound-shielding element according to claim 1, wherein said panel presents a thickness between 0.05 and 4 mm, an average diameter or width of said perforations between 0.01 and 0.7 mm and a hole/surface ratio between 0.01 and 5 %.
3. Sound shielding element according to Claim 1, wherein said panel or layer is made of polypropylene.
4. Sound shielding element according to Claim 1, wherein said perforations are configured as narrow or fine slots having width between 0.02 and 0.18 mm and a length between 0.02 and 30 mm.
5. Sound shielding element according to Claim 4, wherein said slots have width between 0.08 and 0.15 mm and slot length between 0.8 and 2.2 mm and are disposed at an offset at a spacing transversely to a longitudinal extension by less than half the slot length.
6. Sound shielding element according to Claim 1, wherein said panel is configured as a three-dimensionally shaped moulded part and is injection-moulded or pressed from synthetic material.

7. Sound shielding element according to Claim 1, wherein said panel or layer is three-dimensionally shaped without cutting by stretching.

8. Sound shielding element according to Claim 1, wherein said panel or layer is deep-drawn from a planar plate, board, tape, strip or sheet.

9. Sound shielding element according to Claim 2, wherein said panel presents a thickness between 0.2 and 1 mm.

10. Sound shielding element according to Claim 9, wherein said panel or layer is provided with said perforations in a sieve-like or raster-like form.

11. Sound shielding element according to Claim 1, wherein said panel or layer comprises aluminium, steel sheet, ceramic or a highly temperature-resistant synthetic material.

12. Sound shielding element according to Claim 1, wherein said panel or layer is used as a covering layer on a sound-absorbing layer including a nonwoven fabric or foamed material or on a chamber-type or membrane-type absorber, and presents the hole/surface ratio between 3 and 10 % and an average hole diameter between 0.1 and 0.5 mm.

13. Sound shielding element according to Claim 1, wherein said element is used as an injection-moulded operating element.

14. Sound shielding element according to Claim 1, wherein said element is used as roof lining in a passenger compartment of motor vehicles.

15. Sound shielding element according to Claim 1, wherein said element is used on an underbody lining of motor vehicles.

16. Sound shielding element according to Claim 1, wherein said element is used as an injection-moulded cover unit for covering cables.

17. Sound shielding element according to Claim 1, wherein said element is a wheel case shell on motor vehicles.

18. Sound shielding element according to Claim 1, wherein said element is a hat rack in motor vehicles.

19. Sound shielding element according to Claim 1, wherein said element is a seat cover in motor vehicles.

20. Sound shielding element according to Claim 1, wherein said element is a door lining.

21. Sound shielding element according to Claim 1, wherein said element is an absorbing tube for air-conducting tubes.

22. Sound shielding element according to Claim 1, wherein said element is a decorative wheel shield or engine bonnet lining of motor vehicles.

23. Sound shielding element according to Claim 1, wherein said element is a cover for covering at least one part of an internal combustion engine.

24. Sound shielding element according to Claim 1, wherein said element is a luggage trunk cover.

25. Sound shielding element according to Claim 1, wherein said element is a thermal shielding element.

26. Sound shielding element according to Claim 1, wherein said element is a covering layer on honey-comb composite panels.

27. Sound shielding element according to Claim 1, wherein at least two said panels are spaced from each other and disposed in a substantially parallel arrangement.

28. Method of producing a sound-shielding element for covering at least one of sound-reflecting or sound-generating structural parts, the element including at least one panel or layer, a plurality of small perforations formed in said at least one panel or layer, wherein an average diameter or width of said perforations ranges between 0.001 and 0.7 mm and a hole/surface ratio ranges between 0.001 and 8 % so that the sound waves entering said perforations initiate physical effects in a gas volume contained in said perforations, the method comprising: forming said panel or layer by fusing or bonding particles or fibers.

29. Method of producing a sound shielding element according to Claim 28, wherein said panel or layer is produced by weaving threads formed of fibers.

30. Method of producing a sound shielding element according to Claim 28, wherein said panel is produced by impregnating a textile tissue with a thermoplastic material and molding into a three-dimensional shape.

31. Method of producing a sound shielding element according to Claim 28, wherein said plurality of perforations are produced by electric discharges using an electric arc through said panel or layer.

32. Method of producing a sound shielding element according to Claim 28, wherein said plurality of perforations are produced by bombardment of said panel or layer with particles.

33. Method of producing a sound shielding element according to Claim 28, wherein said plurality of perforations are produced by means of a needle or cutter blocks.

34. Method according to Claim 33, wherein distortions of said perforation in said panel or layer are closed by pressing by shaping rollers.

35. Sound-shielding element, comprising:  
at least one panel or layer for covering at least one of sound-reflecting or sound-generating structural parts;  
a plurality of small perforations formed in said at least one panel or layer;  
wherein an average diameter or width of said perforations ranges between 0.001 and 0.7 mm and a hole/surface ratio ranges between 0.001 and 8 % so that the sound waves entering said perforations initiate physical effects in a gas volume contained in said perforations.